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2001–2010: Decade to Roll Back Malaria in Developing Countries, Particularly in Africa

Consolidating gains and accelerating efforts to control and eliminate malaria in developing countries, particularly in Africa, by 2030

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Director-General of the World Health Organization, submitted in accordance with General Assembly resolution 71/325.

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Report of the Director-General of the World Health Organization on consolidating gains and accelerating efforts to control and eliminate malaria in developing countries, particularly in Africa, by 2030

Summary

The present report is submitted in response to General Assembly resolution 71/325. It provides a review of progress in the implementation of the resolution, focusing on the adoption and scaling-up of interventions recommended by the World Health Organization in malaria-endemic countries. It elaborates on the challenges limiting the full achievement of the targets and provides recommendations to ensure that progress is accelerated towards the goals of the Global Technical Strategy for Malaria 2016–2030 in the coming years, including the need for: (a) increased financing; (b) the rapid scaling up of prevention, diagnosis and treatment to overcome existing coverage gaps; (c) strengthened national strategic malaria plans that take a whole-of-government approach and build synergies with other development priorities, including universal health coverage; (d) strengthened malaria surveillance and data quality in endemic regions; and (e) multi-stakeholder engagement, including continued contributions from the scientific community, civil society and the private sector.

I. Introduction

1. While malaria is a preventable and treatable disease, it continues to have a devastating impact on the health and livelihood of people around the world. In 2016, there were an estimated 216 million cases of malaria and 445,000 malaria-related deaths in 91 countries. Children under the age of 5 in sub-Saharan Africa account for approximately two thirds of global deaths due to malaria.

2. The present report highlights progress and challenges in the control and elimination of malaria in the context of General Assembly resolution 71/325. It draws heavily on the *World Malaria Report 2017*, a World Health Organization (WHO) analysis based on the latest available data (2016) received from countries where malaria is endemic and organizations supporting global malaria efforts. Data from 2017 are currently being collected and reviewed by WHO.

3. In May 2015, the World Health Assembly endorsed the Global Technical Strategy for Malaria 2016–2030, a technical framework for all countries working to control and eliminate malaria. The Global Technical Strategy sets the goals of reducing malaria case incidence and death rates by at least 90 per cent by 2030 (compared with 2015 levels) and eliminating malaria in at least 35 countries. Near-term targets for 2020 include reductions of at least 40 per cent in the global malaria disease burden and the elimination of malaria in at least 10 countries.

4. Together with HIV/AIDS, tuberculosis and other neglected tropical diseases, malaria is included under Goal 3, target 3 of the Sustainable Development Goals, which aims to "end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases" by the year 2030. With respect to malaria, WHO interprets that target as the attainment of the goals of the Global Technical Strategy. Expanded access to malaria interventions will also contribute to the broader health and development agenda embodied in the Goals as well as to global efforts to move towards universal health coverage.

5. The success of efforts to control and eliminate malaria is measured through an analysis of trends in the disease burden, access to key malaria control tools and progress towards the goals of the Global Technical Strategy. WHO recommends a multipronged strategy to reduce the malaria burden, including the scaling up of vector control interventions, preventive therapies, diagnostic testing, quality-assured treatment and robust malaria surveillance.

II. Current situation

6. After many years of impressive reductions in the global malaria burden, as shown in the annual WHO *World Malaria Report*, WHO noted a worrying trend in the data comprising the *World Malaria Report 2017*: progress had unquestionably levelled off. In 2016, there were 216 million cases of malaria, an increase of 5 million cases over 2015. Deaths stood at 445,000, a number similar to the previous year. All regions that had ongoing malaria transmission reported increases in malaria case incidence from 2014 to 2016. The world is not on a trajectory to achieve two critical milestones of the Global Technical Strategy: reducing case incidence and mortality rates globally by at least 40 per cent by 2020.

7. The WHO African Region continued to shoulder approximately 90 per cent of the global malaria burden in 2016. Fifteen countries, all but one in sub-Saharan Africa, accounted for 80 per cent of global malaria deaths. New data from a number of countries in the region suggest that WHO case estimates for 2016 are conservative. WHO will review its malaria burden estimation methods for the region in 2018.

8. *Plasmodium falciparum* remains the most prevalent malaria parasite in sub-Saharan Africa, accounting for 99 per cent of estimated malaria cases in 2016. *Plasmodium vivax* is the predominant parasite in the WHO Region of the Americas, representing 64 per cent of malaria cases, and is responsible for a significant number of cases in the WHO South-East Asia Region (30 per cent) and the Eastern Mediterranean Region (40 per cent).

Vector control measures

9. The scale-up of insecticide-treated mosquito net distribution[1] has made a major contribution to the reduction in malaria burden since 2000. In 2016, an estimated 54 per cent of people at risk of malaria in sub-Saharan Africa slept under an insecticide-treated net compared with 30 per cent in 2010. However, the rate of increase in insecticide-treated net coverage has slowed since 2014 and, by 2016, the proportion of households with sufficient nets (i.e., one net for every two people) remained inadequate, at 43 per cent.

10. Spraying the inside walls of homes with insecticides (indoor residual spraying) is another important prevention measure. A precipitous drop in indoor residual spraying coverage has been reported in the WHO African Region since 2010, as were declines in all other WHO regions over that same period. Globally, indoor residual spraying protection declined from a peak of 5.8 per cent in 2010 to 2.9 per cent in 2016.

11. In many countries, progress in malaria control is threatened by the rapid development and spread of mosquito resistance to the insecticides used in insecticide-treated nets and indoor residual spraying. Of the 76 malaria endemic countries that provided data for the period 2010 to 2016, resistance to at least one insecticide in one malaria vector from one collection site was detected in 61 countries; 50 of the 61 countries reported resistance to two or more insecticide classes.

12. Despite an increasing number of reports of insecticide resistance, evidence of its public health impact is scarce. A large WHO multi-country evaluation conducted over five years found that insecticide-treated nets continue to be an effective tool in the malaria fight, even in areas where mosquitoes have developed resistance to pyrethroids (the insecticide class used in insecticide-treated nets).[2]

13. The WHO *Global vector control response 2017–2030* outlines a plan to support countries in mounting coordinated efforts to counter the increasing burden and threat of all vector-borne diseases, including malaria. The strategic approach proposed in the response was strongly supported by member States at the World Health Assembly in May 2017.

Preventive therapies

14. To protect women in areas of moderate and high malaria transmission in Africa, WHO recommends "intermittent preventive treatment in pregnancy" with the antimalarial drug sulfadoxine-pyrimethamine. Among the 23 African countries that reported on levels of intermittent preventive treatment in pregnancy in 2016, an estimated 19 per cent of eligible pregnant women received the recommended three or more doses of the drug, compared with 18 per cent in 2015 and 13 per cent in 2014.

[1] Although WHO recommends the use of long-lasting insecticidal nets, given the continued use of conventional insecticide-treated nets, especially outside of Africa, the more generic term "insecticide-treated nets" is used throughout the present document.

[2] The findings of the study are available from www.who.int/malaria/publications/atoz/insecticide-resistance-implications/en/.

15. Since 2012, seasonal malaria chemoprevention has been recommended by WHO for children aged 3 to 59 months living in areas of highly seasonal malaria transmission in the Sahel subregion of Africa. In 2016, 15 million children in 12 countries in that subregion were protected through seasonal malaria chemoprevention programmes. However, some 13 million children who could have benefited from that intervention were not covered, mainly due to a lack of funding.

Diagnostic testing and treatment

16. Since 2010, WHO has recommended the diagnostic testing of all suspected malaria cases when patients seek treatment at health clinics or pharmacies, or by community health workers. According to the *World Malaria Report 2017*, the testing of suspected cases in the public health system has increased in most WHO regions since 2010. The WHO African Region recorded the biggest rise, with diagnostic testing increasing from 36 per cent of suspected cases in 2010 to 87 per cent in 2016.

17. In the WHO African Region, a majority of patients (70 per cent) who sought treatment for malaria in the public health sector in 2016 received artemisinin-based combination therapies, which are the most effective antimalarial medicines. However, access to the public health system remains low: national-level surveys show that only one third (34 per cent) of children with a fever are taken to a medical provider in the public health sector. Further data are required to gain a greater understanding of barriers to treatment access at the health facility and community level.

18. In some settings, increasing levels of *P. falciparum* malaria caused by parasites with histidine-rich protein 2 (HRP2) gene deletions threaten the ability to diagnose and appropriately treat people infected with *P. falciparum* malaria. An absence of the HRP2 gene enables parasites to evade detection by HRP2-based rapid diagnostic tests, resulting in a false-negative test result. Although the prevalence of HRP2 gene deletions in most high-transmission countries remains low, further monitoring is required.

19. Community-based health programmes can significantly reduce malaria-related child mortality in rural communities. For example, through the Rapid Access Expansion Programme, supported by WHO and non-governmental organizations, more than 8,400 community health workers have been trained and deployed in five African countries since 2013, and have treated more than 7.1 million cases of malaria, pneumonia and diarrhoea among children under the age of 5.

The threat of drug resistance

20. Over the past decade, the presence of multidrug-resistant malaria parasites in the Greater Mekong subregion has been a key concern for malaria control efforts. To date, *P. falciparum* resistance to artemisinin has been detected in five countries in the subregion: Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam. However, current first-line artemisinin-based combination therapies remain efficacious, and the immediate threat of antimalarial drug resistance is low. Drug failure is unlikely to have played a role in the trends documented in the *World Malaria Report 2017*.

21. In 2015, the ministers for health in the subregion adopted the WHO Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030). Urging immediate action, the strategy calls for the elimination of all species of human malaria from the subregion by 2030, with priority action targeted to areas where multidrug-resistant malaria parasites have been identified.

22. With technical guidance from WHO and other partners, all countries in the Greater Mekong subregion have developed national malaria elimination plans. As

countries implement those plans, WHO provides technical support through its Greater Mekong subregion country offices, two regional offices and WHO headquarters. A subregional team based in Phnom Penh supports the elimination strategy by facilitating coordination and dialogue among partners and coordinating cross-border initiatives.

23. A new data-sharing platform, launched by WHO with financial support from the Global Fund to Fight AIDS, Tuberculosis and Malaria, is helping countries map and analyse their disease burden and identify gaps in coverage of key malaria control tools. The platform will serve as an important tool for aligning and harmonizing malaria surveillance and response strategies in the Greater Mekong subregion and globally.

24. Across the Greater Mekong subregion, concerted efforts to prevent, diagnose and treat malaria are yielding results: from 2012 to 2016, the reported number of malaria cases fell by an estimated 74 per cent, and malaria deaths fell by 91 per cent in the same period.

Elimination and certification

25. Countries that achieve at least three consecutive years of zero indigenous cases of malaria are eligible to apply for a WHO certification of malaria-free status. Since 2000, six countries have been certified by WHO as free of malaria: United Arab Emirates (2007), Morocco (2010), Turkmenistan (2010), Armenia (2011), Kyrgyzstan (2016) and Sri Lanka (2016).

26. The Global Technical Strategy calls for the elimination of malaria in at least 10 countries by 2020; to meet that target, a country must achieve at least one year of zero indigenous cases by 2020. According to an analysis undertaken by WHO, 21 countries have the potential to eliminate malaria by 2020.[3] Together, those countries form the "E-2020" and are the focus of a special WHO initiative. Although a number of E-2020 countries remain on track to achieve their elimination goals, 11 have reported increases in indigenous malaria cases since 2015.

27. Released in 2017, *A framework for malaria elimination* provides guidance on the tools and strategies required to achieve the elimination of malaria and prevent the re-establishment of transmission in all countries, regardless of where they lie on the spectrum of transmission intensity. It is intended to inform national strategic plans for the elimination of malaria and should be adapted to local contexts.

Eradication

28. In August 2016, WHO established a Strategic Advisory Group on Malaria Eradication to advise the organization on the feasibility, potential strategies and cost of eradicating malaria over the next decades, building on the goals and targets set by the Global Technical Strategy and in the context of the Sustainable Development Goals. To date, members of the Strategic Advisory Group have defined a set of work packages that are cross-cutting and span a breadth of domains: biological, technical, financial, socioeconomic, political and environmental. A summary report is anticipated in early 2019.

29. The Strategic Advisory Group developed a report for the 141st session of the WHO Executive Board that clarifies current terminology on "elimination" and "eradication" and affirms the organization's long-standing commitment to

[3] Algeria, Belize, Bhutan, Botswana, Cabo Verde, China, Comoros, Costa Rica, Ecuador, El Salvador, Iran (Islamic Republic of), Malaysia, Mexico, Nepal, Paraguay, Republic of Korea, Saudi Arabia, South Africa, Suriname, Swaziland and Timor-Leste.

eradication, without specifying an end date for the achievement of that goal.[4] Members of the Executive Board expressed strong appreciation for the report and for the creation of the Strategic Advisory Group.

Surveillance

30. A malaria surveillance system comprises the tools, procedures, people and structures that generate information on malaria cases and deaths. Strong malaria surveillance systems enable ministries of health to: identify gaps in programme coverage and respond effectively to disease outbreaks; guide changes in programme planning so that resources are directed to populations most in need; and regularly assess the impact of control measures in reducing disease burden.

31. Strengthening surveillance systems is a key pillar of the Global Technical Strategy. The Global Technical Strategy urges countries to substantially expand malaria surveillance and transform it into a core intervention that is as important as vector control, diagnostic testing or treatment. In addition to helping accelerate progress towards the 2030 targets, increased investments in malaria surveillance will ease the current reliance on model-based disease estimation methods.

32. According to the *World Malaria Report 2017*, while malaria case detection rates were gradually improving, 31 countries with a high malaria burden captured fewer than 50 per cent of malaria cases; improved data from those countries would have a substantial impact on future estimates of malaria burden and trends. A lack of data from private health service providers continues to be a major surveillance bottleneck.

Global guidance from the World Health Organization

33. The WHO Global Technical Strategy for Malaria 2016–2030 provides countries with evidence-based technical guidance. The Global Technical Strategy was developed in close consultation with endemic countries and partners, and the process was overseen by the Malaria Policy Advisory Committee and a dedicated steering committee.

34. The Global Technical Strategy is built on three pillars: (1) ensure universal access to malaria prevention, diagnosis and treatment; (2) accelerate efforts towards the elimination and attainment of malaria-free status; and (3) transform malaria surveillance into a core intervention. The pillars are complemented by two supporting elements: (1) harnessing innovation and expanding research and (2) strengthening the enabling environment.

35. The Global Technical Strategy provides the technical underpinning for the Roll Back Malaria Partnership's *Action and Investment to Defeat Malaria 2016–2030 — for a Malaria-Free World*, which was released in 2015. The focus of that document is on supporting the implementation of the Global Technical Strategy though global advocacy, resource mobilization, partner harmonization and the engagement of the public and private sectors. It positions malaria firmly within the Sustainable Development Goals agenda.

36. In 2017, WHO issued new guidance on mass drug administration for *P. falciparum* malaria and updated recommendations on how to achieve and maintain universal access to insecticide-treated nets for all people at risk of malaria. The WHO process for the evaluation of vector control tools, technologies and approaches was recently revised to better meet the needs of countries where vector-borne diseases either pose a risk or are endemic. WHO has also provided updated guidance for

[4] The report is available from http://apps.who.int/gb/ebwha/pdf_files/EB141/B141_3-en.pdf?ua=1.

investigating suspected false-negative results by rapid diagnostic tests and new recommendations on rectal artesunate for the pre-referral treatment of severe malaria.

Global partnership and political commitment

37. The Roll Back Malaria Partnership was transformed in 2016 to enhance its contribution to the fight against malaria. During that year, the Partnership was strengthened to mobilize the necessary resources for the global malaria response and to advocate for sustained political will and coordinated action. Dr. Kesetebirhan Admasu, the former Minister for Health of Ethiopia from 2012 to 2016, was appointed to the role of Chief Executive Officer and took up his function in February 2017.

38. African Heads of State continue to meet twice a year for a dedicated malaria forum at the African Union Summit to reaffirm their commitment to eliminating malaria by 2030. At the twenty-seventh African Union Summit in July 2016, African leaders committed to intensifying efforts to address three major public health threats with the endorsement of the Catalytic Framework to End AIDS, TB and Eliminate Malaria in Africa by 2030. Through the African Leaders Malaria Alliance, 49 Heads of State and Government work across country and regional borders to facilitate action and accountability in the region's fight against malaria.

39. Countries in the Asia-Pacific region, with leadership from Australia and Viet Nam, launched the Asia Pacific Leaders Malaria Alliance in October 2013. Its mission is to support and facilitate the elimination of malaria across the region by 2030, or earlier if possible. WHO supports the secretariat of the Alliance, at the Asian Development Bank in Manila, through the provision of technical guidance. The APLMA Leaders' Dashboard 2017 enables countries to track malaria elimination progress and achievements, across all sectors; it was developed in close collaboration with WHO, drawing on indicators from the *World Malaria Report 2017*.

III. Urgent funding needs

40. In 2016, an estimated $2.7 billion was invested in malaria control and elimination efforts globally. Governments of countries in which malaria is endemic contributed $800 million (31 per cent of total funding). The United States of America was the largest international source of malaria financing in 2016, providing $1 billion (38 per cent), followed by the United Kingdom of Great Britain and Northern Ireland and other international donors, including France, Germany and Japan.

41. Funding for malaria has plateaued since 2010, and the level of investment in 2016 was less than half (41 per cent) of the estimated $6.5 billion required annually, by 2020, to meet the goals of the Global Technical Strategy. Worryingly, in 34 of 41 countries with high malaria burden, the average level of funding available per person at risk of malaria during the period 2014–2016 was lower than the previous three-year period (2011–2013). Insufficient funding is the greatest threat to the gains achieved in the global response to malaria.

IV. Recommendations

42. The results of the *World Malaria Report 2017* signal a clear need for greater investment in malaria control, particularly in countries in the WHO African Region that have a high malaria burden. Adequate and predictable financing is essential to sustaining progress in the fight against malaria. Countries in which malaria is endemic are urged to increase the domestic resources they make available to combat the

disease, while greater alignment of global financing mechanisms is encouraged to maximize the impact of resources in line with national priorities.

43. It is urgent that gaps in the coverage of existing WHO-recommended malaria control tools be closed. On World Malaria Day in 2017, WHO called attention to critical gaps in prevention, particularly in sub-Saharan Africa. Member States are encouraged to rapidly scale up coverage of malaria prevention, diagnosis and treatment, leverage existing channels for integrated service delivery where possible and strengthen systems to respond to the needs of local communities.

44. Countries are encouraged to review and strengthen their national strategic malaria plans, in line with the technical recommendations provided by WHO, and firmly embed them within national health sector and development plans. To achieve better impact, and to ensure that successes are sustained, countries should increasingly adopt a multisectoral approach to malaria control, taking a whole-of-government approach to fully address its social determinants and building on synergies with other development priorities, including universal health coverage.

45. There is a critical need to strengthen malaria surveillance and data quality in all regions where malaria is endemic in order to accurately measure progress, combat resurgence and target resources, particularly in the face of growing resistance to treatment and preventive measures. Additional financing is needed to strengthen national and regional surveillance systems and to support the sharing and analysis of best practices to address urgent programmatic challenges, improve monitoring and evaluation and conduct regular financial planning and gap analyses.

46. The contributions of the scientific community, civil society and the private sector remain essential: new products such as improved diagnostic tools, vaccines, more effective medicines, new insecticides and more durable insecticide-treated nets are fundamental to ensuring sustained progress in efforts to combat the evolving disease. Progress against malaria can only be maintained through a concerted and focused multi-stakeholder effort, built on the foundation of political commitment, an engaged civil society and continuous scientific advancement and vigorous innovation.